



Colorado Greenhouse Gas Pollution Reduction Roadmap: Transportation Emission Strategies

**Presentation to the Transportation Legislation Review
Committee**

By CEO and CDOT, August 2022





Agenda

OVERVIEW

POLICY AND PROGRAM UPDATES

LOOKING AHEAD

Largest GHG Emissions Sources

2020 CO GHG Emissions (MMT CO₂e, AR5 100-yr GWP)

2020 Largest Emissions Sources

1. Transportation
2. Electric power
3. Oil & Gas
4. Industry
5. Buildings



Colorado Sector Based Emissions Targets

Sector	Revised 2005 Baseline (MMT CO ₂ e)	2025 Target (MMT CO ₂ e)	2030 Target (MMT CO ₂ e)
Electricity	40.28	21	8
Oil and Gas	20.17	13	8
Transportation	30.71	23	18
Residential, Commercial, Industrial Energy Use	24.65	26	20
Other	23.42	19.9	15.6
Total	139.22	102.9	69.6
Percent Reduction	--	26%	50%



Transportation Greenhouse Gas Emissions Reduction

★ = updates from last year

Reduce GHG pollution ~12.7 million tons by 2030

6 MMT
reduction

Low & Zero Emission Vehicle rules

2 MMT
reduction

Utility and public investment in fleet turnover and infrastructure for light-duty zero emission vehicles (SB19-077, electrification investments from SB21-260)



1.5 MMT
reduction

GHG Transportation Planning Standard

~3.2 MMT
reduction

Collectively, the other strategies will target remaining 3.2 million tons

Incentivize land use to increase housing near jobs and reduce VMT and pollution



Clean trucking strategy - infrastructure, fleet incentives, consider regulatory tools such as advanced clean trucks and fleet rules (*estimated to reduce approximately 0.4 MMT by 2030*)

Participate in developing post model year 2025 vehicle standards (state and federal)

AQCC evaluation of indirect source rules

Expansion of public transit, including setting the stage for Front Range Rail

Key updates since last year

- GHG Transportation Planning Standard and mitigation policy approved
- Enterprises created and 10 Year Plans developed
- Clean Truck Strategy developed
- National Electric Vehicle Infrastructure (NEVI) plan developed
- Western Inter-States Hydrogen Hub initiative created
- Air quality package programs approved and beginning implementation
- Strong Communities incentive program approved and beginning implementation





Agenda

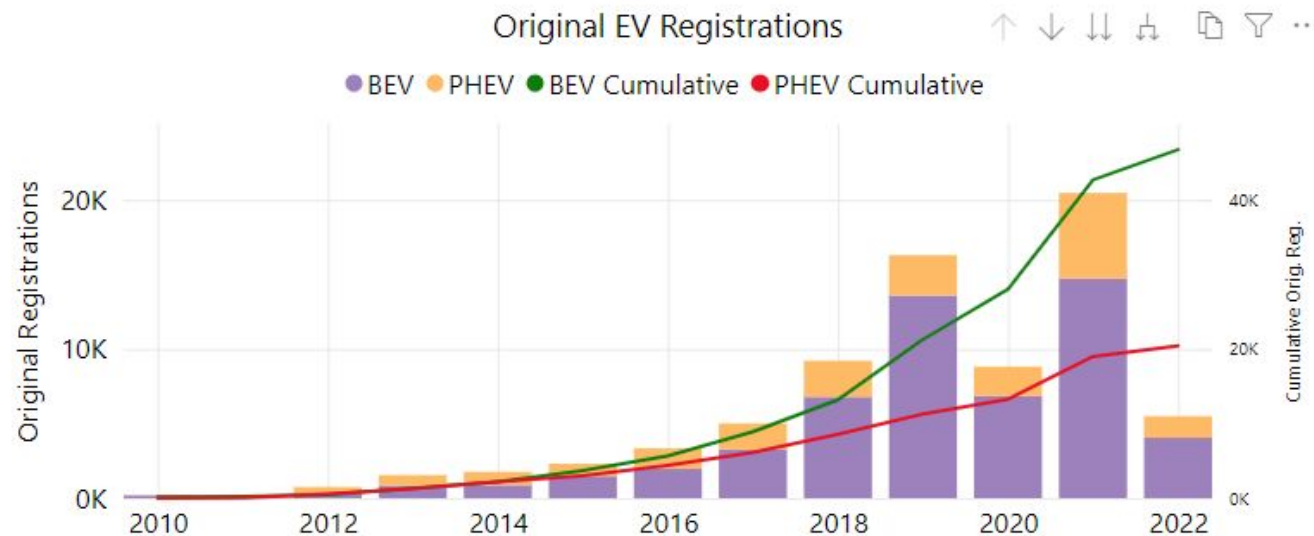
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Low and Zero Emission Light-duty Vehicle Standards

- In 2018, the Air Quality Control Commission (AQCC) approved low emission vehicle (LEV) standards for new light-duty and medium-duty motor vehicles sold in Colorado beginning in the 2022 model year
- Estimated to reduce carbon dioxide emissions by nearly 6 million tons annually by 2030
- In 2019 AQCC approved Zero Emission Vehicle Standards, which increase the percentage of EVs manufacturers must sell each year.



Post Model Year 2025 Light-duty Vehicle Standards

- Federal government (US EPA/US DOT) will develop new light duty vehicle GHG and CAFE standards
- Clean Air Act (CAA) also allows CA to adopt standards; other states can stick with federal standard or opt in to CA standard using Section 177 of CAA
- CARB developing proposal for 100% ZEV new vehicles by 2035; adoption in CA likely later in August 2022
- State will provide input to both federal and CA processes, to maximize likelihood that one or the other will meet Colorado's needs



Target: 1 million light duty EVs by 2030

- Supported by existing policies + recent utility and public investment plans
- Key factors: federal infrastructure and budget reconciliation packages addressing EV tax credits, technology development, charging investments
- Achieving goal is now aligned with strategies of major automakers such as General Motors, Ford, Stellantis
- Achieving goal estimated to reduce GHG approximately 2 million tons in 2030 beyond meeting existing LEV/ZEV standards

2021 CO EV market share (~6-7%) on target with trajectory to reach 2030 goal

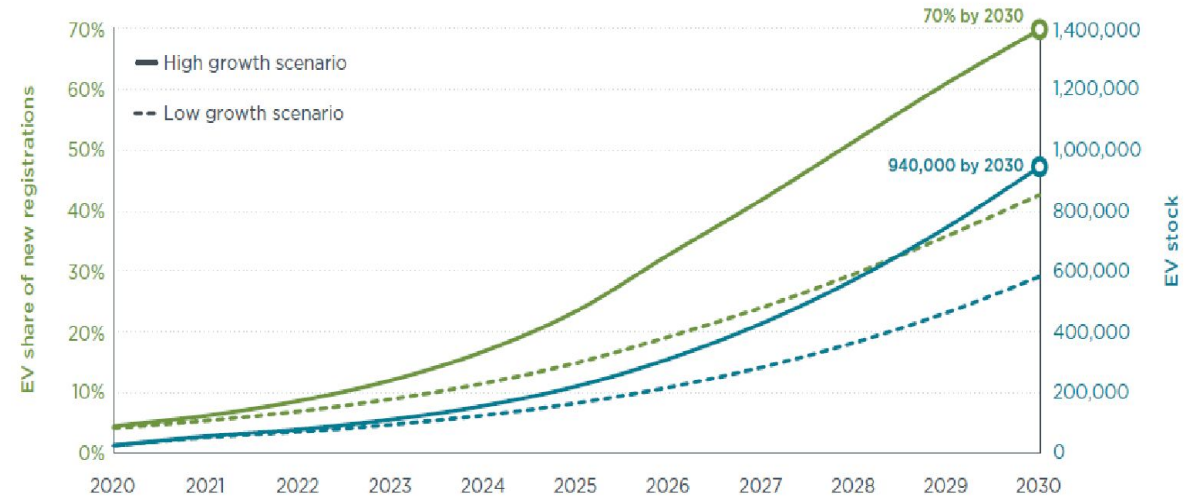


Figure 1. Assumed Colorado new vehicle EV share (green) and total EV stock (blue) from 2020 to 2030 for high (solid line) and low (hashed line) growth scenarios.



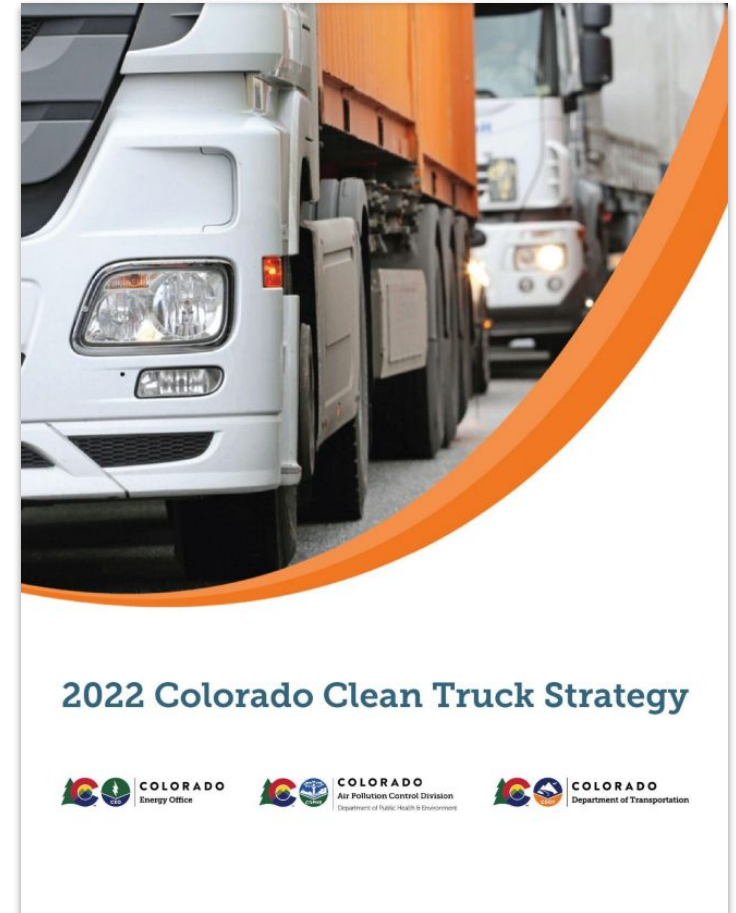
Utility Transportation Electrification Plans (TEPs)

- Legislation to allow rate-basing of EV infrastructure and require every investor owned utility to file TEPs supporting widespread electrification every 3 years
- Plans can include utility or customer owned charging, make ready infrastructure, customer rebates, education and promotion
- Xcel's first plan approved in January 2021 to invest roughly \$105 million over 3 years
 - 15% of budget on equity programs including \$5 million for income-qualified EV rebates
 - Support for residential, workplace & multi-family charging
 - \$2.2 million for electric school buses
- Two more full TEP cycles before 2030 with next due May 2023; statute allows scale of TEPs to increase as EV revenue increases, so may be significant investments



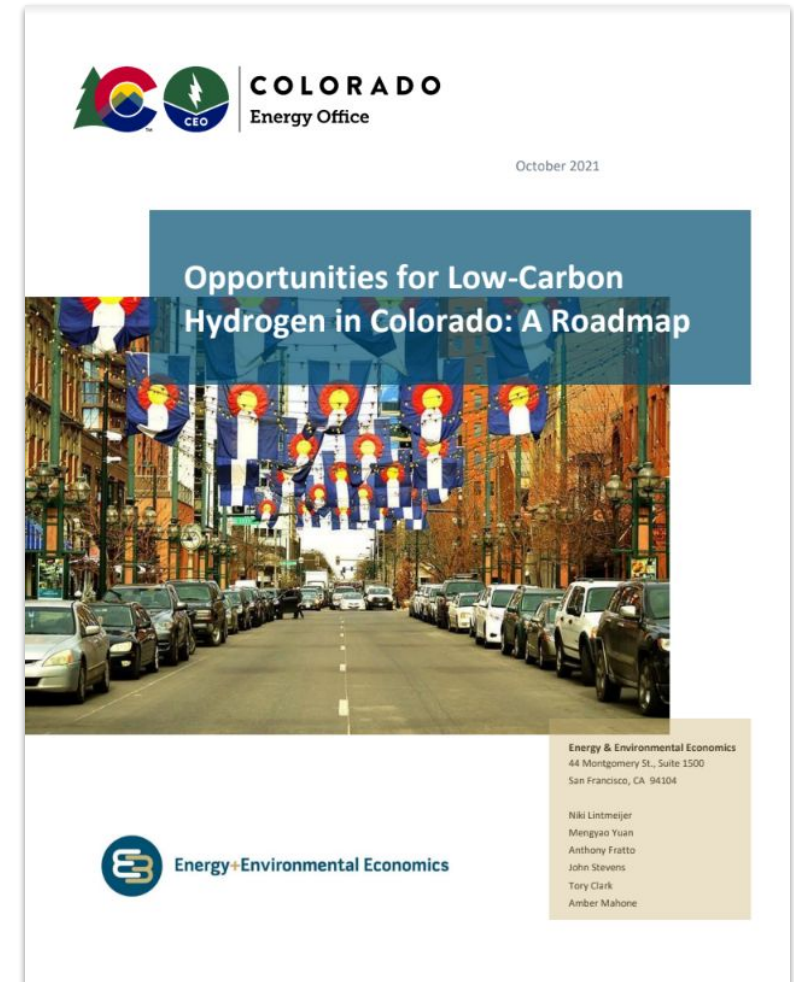
Clean Truck Strategy

- M/HD vehicles make up 10% of vehicles on the road but over 20% of on-road GHG emissions.
- Includes goals and objectives, and 35 prioritized strategies agencies will pursue in the near and medium term.
- Includes recommendations for how to leverage the nearly \$1B in potential funding for clean trucks and buses between SB 260, federal infrastructure funds, Governor's budget, etc.
- Includes recommendation to initiate rulemaking for Advanced Clean Trucks (ACT) and Low NOx Omnibus rule by end of this year.



Hydrogen

- Hydrogen Roadmap Study conducted for state by Energy and Environmental Economics
- The GHG Roadmap identifies hydrogen as a potentially important low-carbon fuel for beyond 2030, especially to reduce emissions in hard-to-electrify sectors like long haul trucking.
- In February 2022, Colorado, New Mexico, Utah, and Wyoming signed a Memorandum of Understanding (MOU) to coordinate, develop, and manage a regional clean hydrogen hub - the Western Inter-States Hydrogen Hub (WISHH). WISHH will work to compete for a portion of the \$8 billion allocated in the 2021 Infrastructure Investment and Jobs Act towards regional hydrogen hubs.



[Colorado Energy Office releases Opportunities for Low-Carbon Hydrogen in Colorado: A Roadmap](#)



Sustainable Land Use Strategies

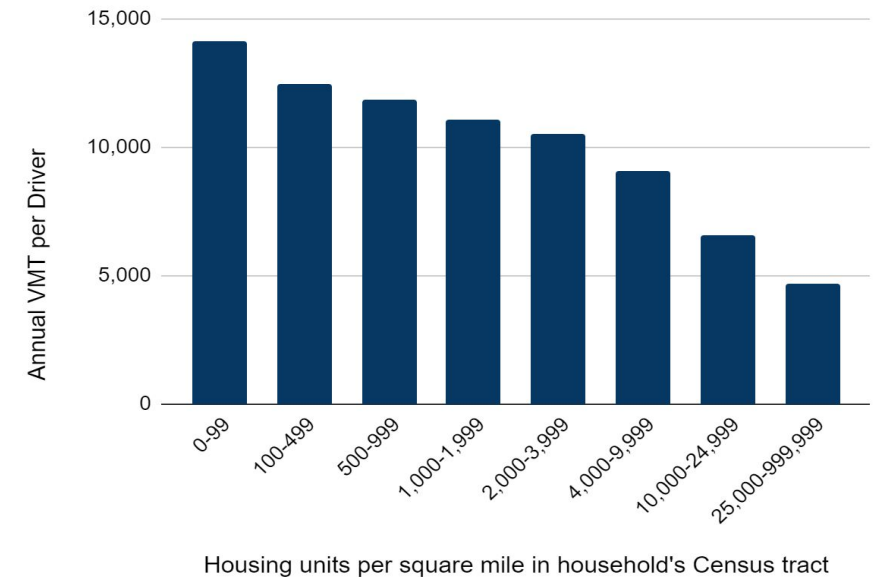
Land use and transportation are closely linked

- Compact development can reduce per capita vehicle miles traveled (VMT) 20 to 40% compared to low density.
- Can also achieve many other equity, economic, and environmental co-benefits.

Key updates

- HB21-1271 and HB21-1117 began the process of creating incentives for local zoning reform
- Beginning implementation of HB22-1304, Strong Communities program
- [Land use research report](#) completed by DOLA, CDOT, CDPHE, CEO

Annual VMT per driver by population density
[National Household Travel Survey, 2017](#)



Indirect Source Standards

- Indirect sources generate or attract motor vehicle activity, such as shopping malls, developments, office buildings, warehouses or industrial sites.
- For all or some categories of projects, indirect source rules could supplement local land use authority to ensure the impacts from large attractors of mobile sources are evaluated and mitigated.
- The first phase of this work involves market research designed to understand the locations and scale of different types of indirect sources. Completion of this study is expected during the state fiscal year 2022-23.



GHG Pollution Standard for Transportation Plans

- Transportation Commission approved the Rule in December 2021.
 - Amended current state rules on transportation planning to incorporate a GHG standard on transportation plans.
 - Rule development process included dozens of stakeholder and public meetings
 - 10 public hearings around the state
- Transportation Commission approved a policy directive for GHG mitigation measures
 - Voluntary component of the Rule
- CDOT, DRCOG and NFRMPO are required to update long range plans by October 1, 2022
- Rule is intended to achieve 1.5 million metric tons of CO₂e reductions by 2030
- <https://www.codot.gov/programs/environmental/greenhouse-gas>



Expansion of Bustang and Transit Infrastructure

- Increased transit and active transportation options are critical to reducing VMT including:
- Four year vision for Bustang Expansion along congested corridors (I-25 and I-70 West) has potential to reduce GHG/Ozone Emissions Annually:
 - Remove 600,400 passenger vehicles on the highway network
 - 49.7 tons of NO_x from passenger vehicles
 - 14,400 tons of CO_2 emissions from passenger vehicles.
- More investment in physical infrastructure such as mobility hubs & Park n Rides.



- More regular and reliable service along existing routes, such as more frequent and expansive bus rapid transit (BRT).
- An intercity passenger rail service has potential to reduce VMT and GHG Emissions along the Front Range.



Multimodal and Mitigation Options Fund

The MMOF funds multimodal transportation projects and operations throughout the state.

Estimated \$448M over 10 Years: Split: 85% Local / 15% State

1. \$146.84 million total - Federal ARPA Recovery funds
2. \$108.1 million total - State Surplus FY21 Revenues
3. \$10.5 million annually - State General Funds, FY2025-32
4. Approx. \$109 million total - State Retail Delivery Fees,
Estimated \$7M in FY23, increasing annually to approx. \$16M in FY32



Multimodal and Mitigation Options Fund

Allocations are approximately 50% Federal recovery / 50% state revenues

Pikes Peak Area		
	\$18,898,912	8.90%
Denver Area	\$127,502,541	60.04%
North Front Range		
	\$15,457,986	7.28%
Pueblo Area	\$5,526,588	2.60%
Grand Valley	\$4,629,639	2.18%
Eastern	\$3,190,010	1.50%
Southeast	\$2,674,866	1.26%
San Luis Valley	\$3,495,635	1.65%

Gunnison Valley	\$6,117,086	2.88%
Southwest	\$3,951,535	1.86%
Intermountain	\$8,390,443	3.95%
Northwest	\$2,413,856	1.14%
Upper Front Range		
	\$4,473,819	2.11%
Central Front Range		
	\$4,236,591	1.99%
South Central	\$1,405,513	0.66%



Revitalizing Main Streets



CDOT's **Revitalizing Main Streets Program** provides grant opportunities to support local communities as they find ways to use public spaces and help businesses thrive, while improving multimodal safety and accessibility along urban arterials and downtowns across Colorado.

Grant Opportunity 1: Larger Safety Infrastructure Projects

- This opportunity supports projects (up to \$2M) that improve safety and transform street spaces, especially for vulnerable users.
- The grant funded **16 projects in 2021 for a total of \$21.6M**

Grant Opportunity 2: Small Multimodal & Economic Resiliency Projects

- This opportunity funds projects (under \$150,000) for rapid implementation that activate downtowns, build multimodal transportation infrastructure, support public health, and improve access and safety for pedestrians, cyclists, and other vulnerable users.
- The grant funded **81 projects for a total of \$8.1M in 2021.**



Transportation: Electrification Investments (HB21-260)

\$733 million of new fee revenue supports 3 new electrification and charging infrastructure enterprises estimated by 2030

Community Access

- New 'Community Access' Enterprise at Colorado Energy Office (CEO)
- Build charging infrastructure in communities across the state, support EV and eBike adoption in low and moderate income communities
- **\$310 million investment**
- Paired with existing CO EV Infrastructure Fund - \$115 million + potential federal \$

Clean Fleet

- New 'Clean Fleet' Enterprise in Colorado Department of Public Health & Environment (CDPHE)
- Support fleet replacement (delivery trucks, TNCs, school buses & other light/medium/heavy duty vehicles) with incentives to meet climate & air quality goals
- **\$289 million investment**

Clean Transit

- New enterprise in Colorado Department of Transportation (CDOT)
- Support electrification of public transit through electrification planning efforts, fleet replacement & associated charging infrastructure
- **\$134 million investment**

Fees have all been established and collection began July 1. Enterprises will begin receiving fees around September 1.

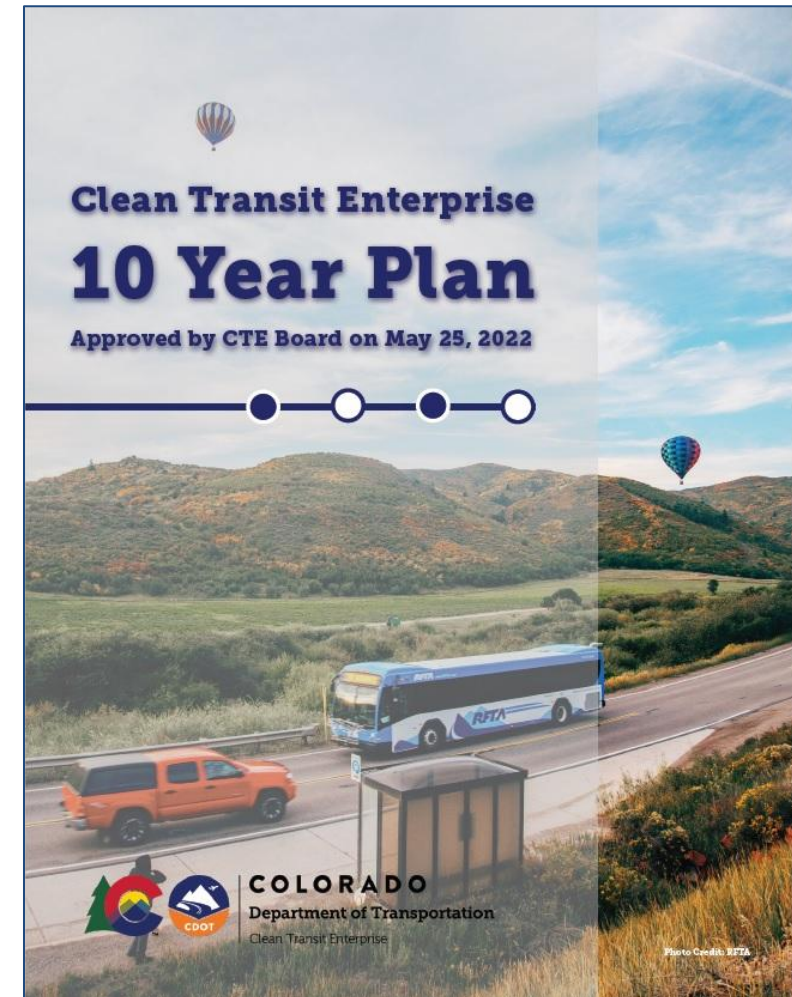


Enterprise Program Updates: Clean Transit

10 Year Plan highlights:

The Clean Transit Enterprise Board reviewed and approved the 10 Year Plan during its meeting on May 25th, 2022. This plan identifies how the CTE will apply its financial resources to accomplish its business purpose of:

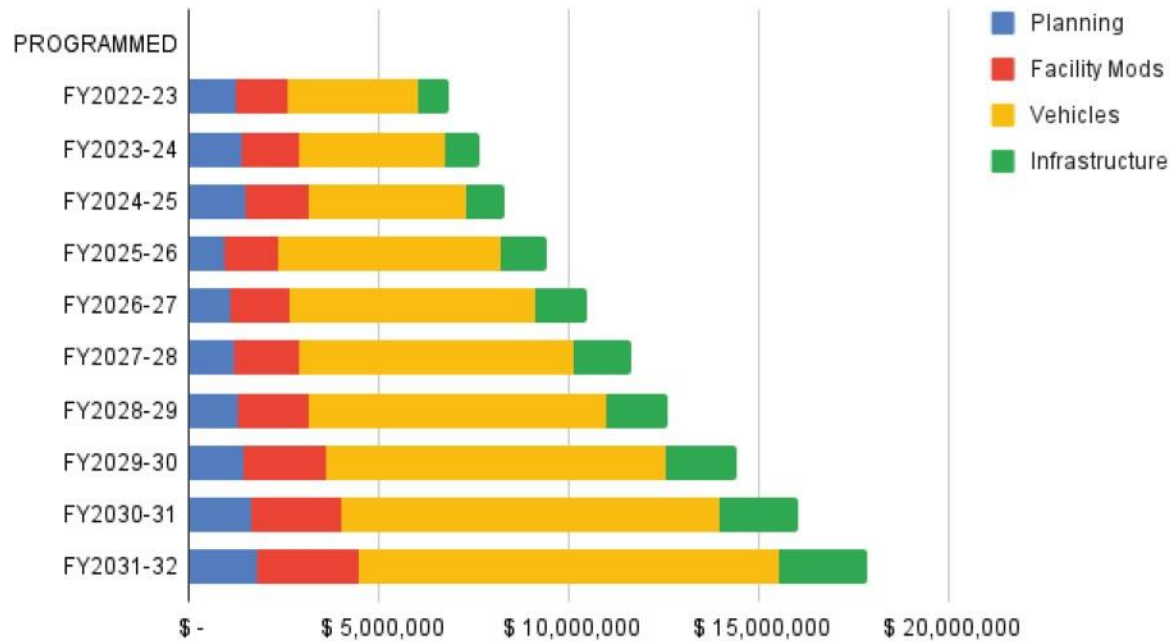
- Supporting the replacement of existing gasoline and diesel public transit vehicles with electric motor vehicles,
- Providing the associated recharging infrastructure for electric transit fleet motor vehicles,
- Supporting facility modifications that allow for the safe operation and maintenance of electric transit motor vehicles,
- Funding planning studies that enable transit agencies to plan for transit vehicle electrification



Enterprise Program Updates: Clean Transit

10 Year Plan highlights:

FIGURE 7: CTE PROGRAMMED FUNDS ESTIMATE BY PROJECT CATEGORY



- In terms of project funding, the 10 Year Plan places a greater emphasis on the Planning and Facility Modification project categories in the first three years and then shifts to a greater emphasis on Vehicles and Infrastructure.
- The intent is to lay the groundwork for successful deployment by agencies that currently lack transition plans, allowing them to ramp up quickly and effectively as more vehicles come to market in the future.
- The CTE is estimated to have \$134 million available over the first 10 years of operation.

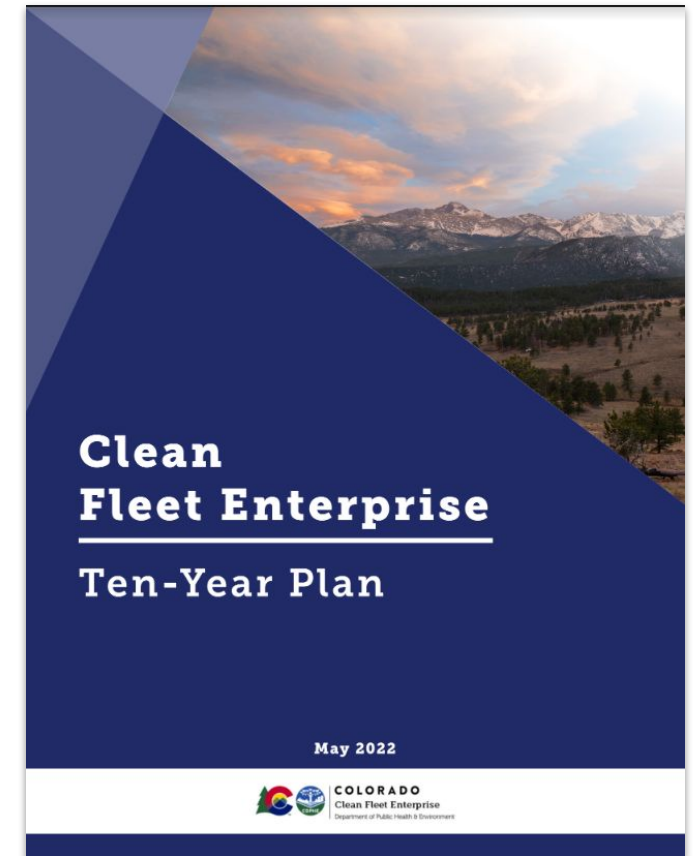


Enterprise Program Updates: Clean Fleet

10 Year Plan highlights:

Funding portfolios:

- Clean Fleet Vehicle and Technology Portfolio
- Clean Fleet TNC Portfolio
- Remote Sensing Prioritization Portfolio
- Clean Fleet Vehicle Workforce Development Portfolio
- Clean Fleet Planning, Research, and Evaluation Portfolio



[Clean Fleet Enterprise](#)



Enterprise Program Updates: Community Access

10 Year Plan highlights:

Existing Programs

- Charge Ahead Colorado
- Can Do Colorado (ebikes)
- DCFC (fast charging) corridors and plazas
- Research + technical support + stakeholder engagement

New Programs

- Community Accelerated Mobility Projects (CAMP) - Technical Readiness and Implementation
- Vehicle Investment for Sustainable Transportation Access (VISTA) - high-emitting vehicle replacement
- Fleet Infrastructure Resources (FIR) - medium-/heavy-duty charging infrastructure
- Cargo eBike pilot for commercial applications
- Service Panel Upgrade + Residential Resources (SPURR) (FY 2024)
- Sustainable Hydrogen Investments for a New Economy (SHINE) (Date TBD)



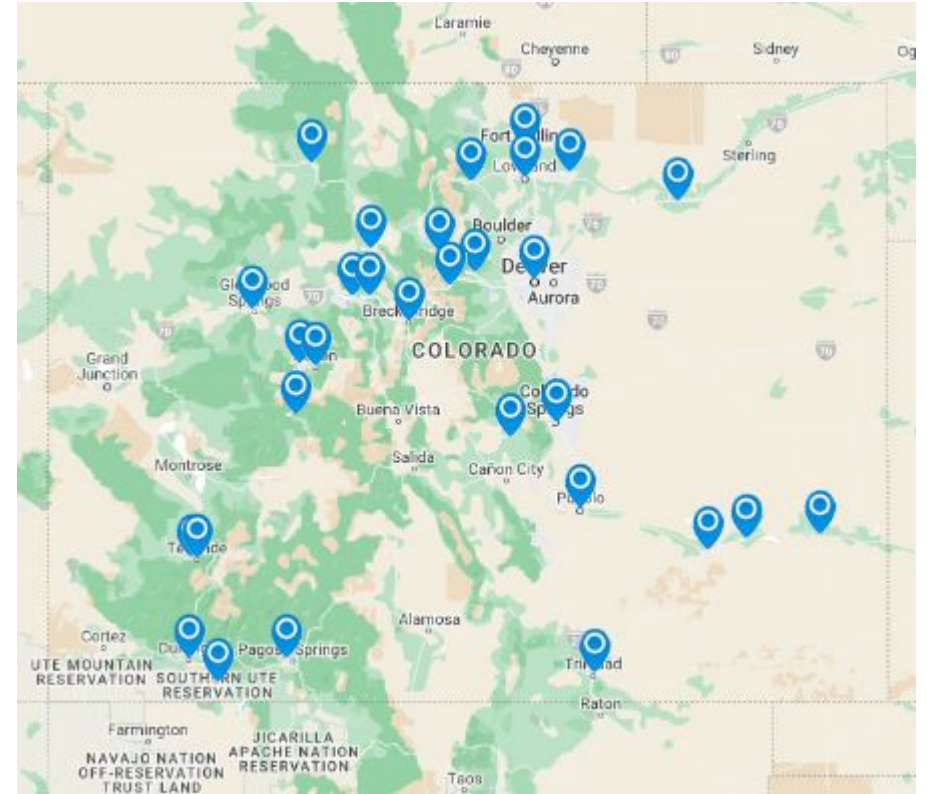
Air quality package programs: SB22-193

- **\$65M for electric school buses** (to be administered by CDPHE)
- **\$12M for eBikes** (to be administered by CEO)
 - E-bike full service and bike share grant program for local governments, tribal governments, or non-profits modeled on previous pilots
 - E-bike rebate program for low and moderate income households and businesses/non-profits for conducting business activities
 - Anticipating launching the program in late 2022/early 2023



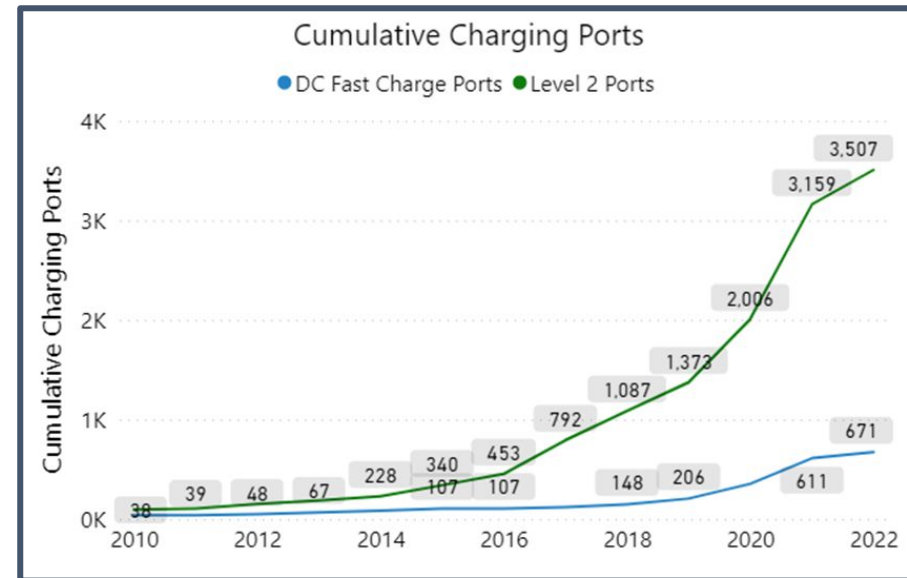
Air quality package programs: SB22-180

- **Creates the \$28M Ozone Season Transit Grant Program** to provide grants to RTD and transit associations to provide free transit service during ozone season this summer and next
- Designed to support the state's transit agencies to rebuild transit ridership following the COVID-19 pandemic
- RTD and 14 other agencies participating this August, along with 15+ agencies already offering free fares
- Bustang family of services are half price through Labor Day.



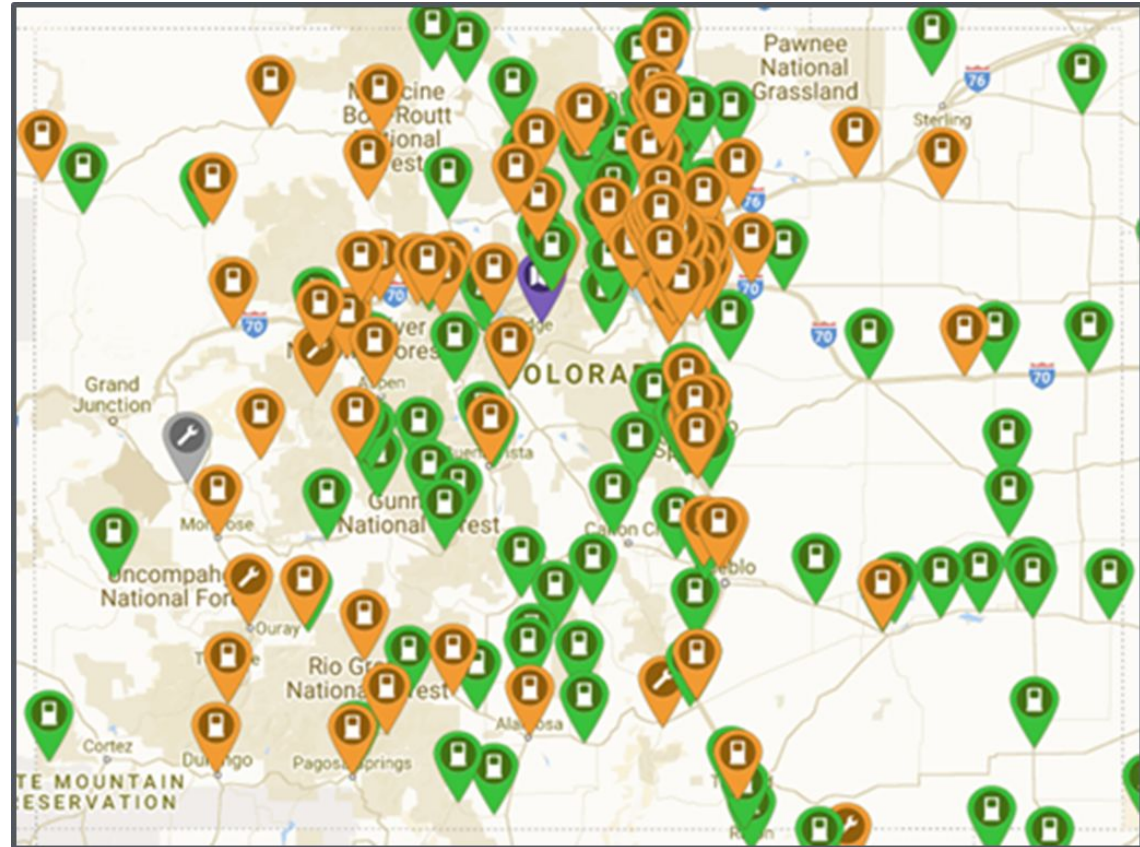
Charging infrastructure program updates

- Charge Ahead Colorado: Community-based Level 2 and DC Fast-Charging (DCFC) stations
- DCFC Corridors: High-speed charging stations along Colorado's major transportation corridors
- DCFC Plazas: High-speed charging stations along corridors and in urban areas for public users and high-mileage fleets

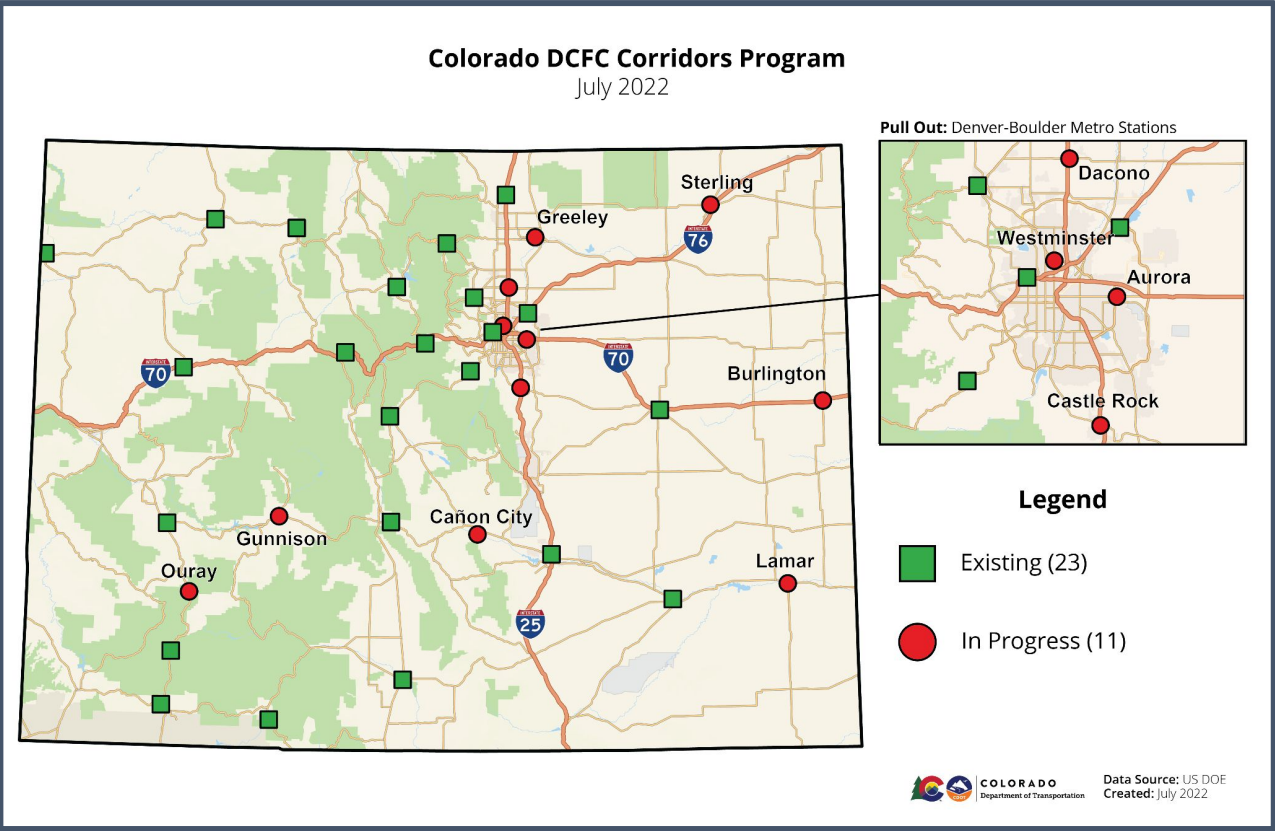


Charge Ahead Colorado

- Grants for community-based Level 2 and DC fast-charging stations across the state
- Competitive application process 3 times per year
- Grants for more than 1,700 stations awarded to date
- Funded through Colorado EV Fund, VW Settlement, CAE, and other sources



DC Fast-Charging Corridor Stations



SB21-230 Charging Infrastructure Programming

- \$5 million for installation of EV charging stations at State facilities
- Stations installed at locations where EVs are likely to be placed over the next 3-5 years
- Interagency agreements issued to numerous agencies for approximately 225 stations



National Electric Vehicle Infrastructure (NEVI) Plan

- The Joint Office of Energy and Transportation confirmed receipt of the CO [NEVI Plan](#) for federal EV charging infrastructure formula funds.
- Colorado is slated to receive \$57M over 5 years
- New corridors designated that will be eligible for NEVI funds: I-270, US 34, US 36, US 287, US 385, and US 550 (plus existing corridors: I-25, I-70, I-76, US 40, US 50, US 160, and US 285)
- Joint implementation by CDOT & CEO
- Between NEVI and state funds, no part of Colorado will be ineligible for EV charging investment

Federally Designated Electric Vehicle Corridors in Colorado
Existing Designated Corridors



Electric Vehicle Education and Awareness Campaign

Campaign Objectives:

- Increase consumer awareness
- Increase # of consumers pursuing EV knowledge
- Increase consumer EV knowledge and accuracy
- Increase EV purchase intent
- Increase visits to EV websites and dealerships
- Grow the EV market faster than without campaign

Target campaign launch: late Fall 2022





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Looking ahead

- Continuing implementation of GHG Roadmap near term actions, enterprise programs, air quality package programs
- Advanced Clean Trucks and Low NOx Omnibus rulemakings will be initiated at the AQCC later this year
- Pursuing policy recommendations, e.g. from the Clean Truck Strategy and revisiting HB22-1218 (EV readiness)
- Update to the GHG Roadmap beginning later this year





QUESTIONS?

